



APPENDIX

# Robot Inspection Guidelines

## Overview

This section describes the Robot Inspection process used at VEX Robotics Competition Tournaments. It also lists the inspection definitions and inspection rules.

## Description

Every *robot* will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all *robot* rules and regulations are met. Initial inspections will typically take place during team registration/practice time. A copy of the official "Robot Inspection Checklist" is located at the end of this guide. Every team should use the "Robot Inspection Checklist" as a guide to pre-inspect their *robot* and ensure that it meets all requirements.

Teams are responsible for ensuring their robot has the latest version of the VEX Master Code installed and has their software updated. Robots are not allowed to receive any feedback from Human Operators during the Autonomous Period. During this time robots must operate and react only to sensor inputs and to pre-programmed commands. Teams are responsible for programming their robot with custom software if they want to perform during the Autonomous Period.

For more information on preparing a robot for Autonomous Operation teams should consult the help guides provided by the developers of their chosen programming software (ex. easyC, ROBOTC, etc).

## Definitions

**Robot** – An operator controlled and/or autonomous programmed vehicle designed and built by a VEX Robotics Competition team to perform specific tasks while competing. The robot can be constructed using only "Official VEX" components and additional components approved for the competition. No other parts will be allowed on the robot. Prior to participating in the competition, each *robot* will be required to pass an inspection. Additional inspections may be required at the discretion of event personnel.

**Robot Sizing Box** – A box used during *robot* inspection which has interior dimensions 18 inches (45.72cm) wide by 18 inches (45.72cm) long by 18 inches (45.72cm) high. The *robot* must fit within the box without touching the box sides or top.

**Robot Identification Flag** – A flag mounted on the *robot* used to identify the alliance of the robot during the match. The flag color is either red or blue.

## Inspection Rules

<I01> The team's *robot* must pass inspection before being allowed to compete in Qualification Rounds. Noncompliance with any *robot* design or construction rule may result in disqualification of the robot at an event.

<I02> Each *robot* must display the appropriate identification features as mandated by the tournament.

<I03> *Robot* construction is constrained by the number of Official VEX Components a team may use as defined in the Robot section of the manual.

<I04> The maximum size of the *robot* for starting a Qualifying or Elimination Match is 18 inches (45.72cm) wide by 18 inches (45.72cm) long by 18 inches (45.72cm) high. The *robot* must fit within a *Robot Sizing Box* without touching the sides or top of the *Robot Sizing Box*. The *robot* must be self-supporting while in the *Robot Sizing Box*.

- a. If a *Robot Sizing Box* is not available, some other measuring device may be used. Measuring devices or templates need to be capable of verifying that the *robot* does not exceed the starting size limitation.

<I05> The starting configuration of the *robot* at the beginning of a match must be the same as a *robot* configuration inspected for compliance, and within the maximum allowed size.

- a. A team may NOT inspect their robot in one configuration or orientation and then place it at the start of a match in a different configuration or orientation.

<I06> *Robot* designs having more than one possible starting configuration, the largest possible configuration must be used during size inspection.

<I07> When a team makes a modification to improve performance or reliability of their *robot*, the team may request a re-inspection of their robot by an Inspector.

<I08> Inspectors evaluate *robots* to insure each *robot* has been designed to operate and function safely. The *robot* must be designed for safe operation and handling. Specific safety rules and limitations apply to the design and construction of a *robot*.

<I09> A *robot* is deemed successfully inspected when all items listed on the "Robot Inspection Checklist" have been recorded as "passed" by an Inspector.

<I10> Each *robot* must include a mounting device to securely hold the *Robot Identification Flag* throughout an entire match. Specific regulations can be found in the Robot section of the manual.

- a. The *Robot Identification Flag* mounting device may NOT extend outside the *Robot Sizing Box*.
- b. The *Robot Identification Flag* may NOT extend outside the *Robot Sizing Box* at the start of a match.
- c. It is permissible for the *Robot Identification Flag* orientation to change during the match.

## Field Control Check

During the Inspection Process each robot will be tested using the VEXnet Competition Switch to ensure the Robot will properly function with the competition field controls.

### The procedure is as follows:

1. Set the VEXnet Competition Switch to "DISABLE" and "AUTONOMOUS".
2. Connect the team's Handheld Controller to the VEXnet Competition Switch using an Ethernet Cable.
3. Turn ON the Robot and the Handheld Controller.
4. Wait for the VEXnet LED on the Handheld Controller to turn Green.
5. Verify the ROBOT LED on the Handheld Controller is not Red.
  - a. A Red robot LED indicates that a 9V Backup Battery is not installed, not connected, or dead.
    - i. Properly install and connect a charged 9V Backup Battery.
6. Verify the GAME LED on the Handheld Controller is Yellow.
  - a. Verify that the team has NO control of their robot.
7. Set the VEXnet Competition Switch to "ENABLE" and "AUTONOMOUS".
  - a. Verify the GAME LED on the Handheld Controller is Fast Green Blink.
  - b. The robot may begin to move if the team has Autonomous Code. Movement is not required.
  - c. Verify that the team has NO control of their robot.
8. Set the VEXnet Competition Switch to "DISABLE" and "AUTONOMOUS".
9. Set the VEXnet Competition Switch to "DISABLE" and "DRIVER".
10. Set the VEXnet Competition Switch to "ENABLE" and "DRIVER".
  - a. Verify the GAME LED on the Handheld Controller is Slow Green Blink.
  - b. Verify that the team has FULL control of their robot.
11. Test Complete!

